Finally, with reference to FIG. **5**, there is depicted a perspective view of one embodiment of an adhesive layer which may be utilized with the electro-optical sensor of the present invention. As depicted, an adhesive layer **40** may be provided which includes apertures **42** and **44**. In one preferred embodiment of the present invention, apertures **42** and **44** preferably directly overlie photo-sensitive device **18** and light-emitting diodes **20** in the embodiment depicted within FIG. **1**. In an embodiment which utilizes the adhesive layer of FIG. **5**, surface **24** of support structure **14** and concave surface **22** of cradle member **12** are manufactured without an adhesive layer. A double-sided adhesive layer **40**, such as that depicted within FIG. **5**, is applied to electro-optical sensor **10** such that apertures **42** and **44** overlie photo-sensitive device **18** and light-emitting diodes **20**. The adhesive on one side of adhesive layer **40** retains adhesive layer **40** within electro-optical sensor, and the adhesive layer on the other side thereof may be utilized to ensure conformance between the skin of the human fingertip and electro-optical sensor **10**.

Upon reference to the foregoing, those skilled in the art will appreciate that the electro-optical sensor depicted within the present application provides an enhanced physical mounting structure for sensitive electronic components while maintaining a low aspect ratio and mass so that motion artifact will be minimized. Further, the utilization of a rigid, opaque, semicylindrical cradle member diminishes substantially the likelihood of erroneous readings caused by the presence of ambient light. Further, the utilization of a circumferential wrap for the flexible support structure accommodates patients having fingernails which are longer than nominal length.

While the invention has been particularly shown and described with reference to a preferred embodiment, it will be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention.

We claim:

1. A non-invasive electro-optical sensor for removable adhesive attachment to a fingertip of a patient for use in measuring light extinction during transillumination of the blood-perfused tissue within said fingertip, said sensor comprising:

an opaque, semi-cylindrical, substantially rigid cradle member having a concave surface, a convex surface and a diameter larger than the diameter of a human fingertip;

a flexible, initially substantially planar web-like support structure attached at one end thereof to said cradle member;

a photosensor mounted on said concave surface of said cradle member;

a light source mounted in said web like support structure, said light source having a light-emitting surface which directly overlies said photosensor when said support structure is wrapped around a human fingertip within said cradle member; and

an adhesive layer on said concave surface of said cradle member for removably adhesively securing said concave surface of said cradle member to a fleshy portion of a human fingertip such that said concave surface is held in conformance with said human fingertip without stressing said human fingertip.

2. The non-invasive electro-optical sensor according to claim **1** further including means for securing said support structure in a wrapped position around a human fingertip within said cradle member such that said light source directly overlies said photosensor.

3. The non-invasive electro-optical sensor according to claim **1** wherein said opaque, semi-cylindrical, substantially rigid cradle member is constructed of molded polyolefin plastic.

4. The non-invasive electro-optical sensor according to claim **3** wherein said opaque, semi-cylindrical, substantially rigid cradle member is constructed of polypropylene.

5. The non-invasive electro-optical sensor according to claim **1** further including a recess within said concave surface of said cradle member for receiving said photosensor.

6. The non-invasive electro-optical sensor according to claim **1** further including an electrical conductor channel formed within said concave surface of said cradle member.

7. The non-invasive electro-optical sensor according to claim **1** wherein said support structure is attached at one end thereof to a circumferential portion of said opaque, semi-cylindrical, substantially cradle member such that said support structure can be wrapped around a circumference of said cradle member.

8. The non-invasive electro-optical sensor according to claim **1** wherein said support structure is attached at one end thereof to an end portion of said opaque, semi-cylindrical, substantially cradle member such that said support structure can be wrapped around an axis of said cradle member.

9. The non-invasive electro-optical sensor according to claim **1** wherein said adhesive layer comprises a separate double-sided adhesive layer applied to said concave surface of said cradle member.

10. A non-invasive electro-optical sensor for removable adhesive attachment to a fingertip of a patient for use in measuring light extinction during transillumination of the blood-perfused tissue within said fingertip, said sensor comprising:

an opaque, semi-cylindrical, substantially rigid cradle member having a concave surface, a convex surface and a diameter larger than the diameter of a human fingertip;

a flexible, initially substantially planar web-like support structure attached at one end thereof to said cradle member;

a light source mounted on said concave surface of said cradle member;

a photosensor mounted in said web like support structure, said photosensor having a photo-sensitive surface which directly overlies said light source when said support structure is wrapped around a human fingertip within said cradle member; and

an adhesive layer on said concave surface of said cradle member for removably adhesively securing said concave surface of said cradle member to a fleshy portion of a human fingertip such that said concave surface is held in conformance with said human fingertip without stressing said human fingertip.

11. The non-invasive electro-optical sensor according to claim **10** further including means for securing said support structure in a wrapped position around a human fingertip within said cradle member such that said light source directly overlies said photosensor.

12. The non-invasive electro-optical sensor according to claim **10** wherein said opaque, semi-cylindrical, substantially rigid cradle member is constructed of molded polyolefin plastic.

13. The non-invasive electro-optical sensor according to claim **12** wherein said opaque, semi-cylindrical, substantially rigid cradle member is constructed of polypropylene.

14. The non-invasive electro-optical sensor according to claim 10 further including a recess within said concave surface of said cradle member for receiving said light source.

15. The non-invasive electro-optical sensor according to claim 10 further including an electrical conductor channel formed within said concave surface of said cradle member.

16. The non-invasive electro-optical sensor according to claim 10 wherein said support structure is attached at one end thereof to a circumferential portion of said opaque, semi-cylindrical, substantially cradle member such that said support structure can be wrapped around a circumference of said cradle member.

17. The non-invasive electro-optical sensor according to claim 10 wherein said support structure is attached at one end thereof to an end portion of said opaque, semi-cylindrical, substantially cradle member such that said support structure can be wrapped around an axis of said cradle member.

18. The non-invasive electro-optical sensor according to claim 10 wherein said adhesive layer comprises a separate double-sided adhesive layer applied to said concave surface of said cradle member.

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